

## WHAT IS CLAIMED IS:

1. A signaling aptamer comprising:

an RNA nucleic acid binding species (aptamer) having a  
5 nucleotide sequence including a random insert of fifty-one  
nucleotides, wherein an A:C:G:U mole ratio of amounts of each  
nucleotide in said random insert is skewed such that the amounts of  
three of four nucleotides are about equal and substantially comprise a  
total amount of all nucleotides in said random insert; and  
10 one or more reporter molecule(s); wherein said reporter  
molecule(s) labels the fourth nucleotide.

2. The signaling aptamer of claim 1, wherein said  
15 nucleotide sequence has the sequence shown in SEQ ID NO: 1.

3. The signaling aptamer of claim 1, wherein the skewed  
mole ratio of the random insert of said nucleotides is 3:3:2:0.38  
20 A:C:G:U.

4. The signaling aptamer of claim 3, wherein the random insert of fifty-one nucleotides has a sequence selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, and SEQ ID NO: 7.

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5. The signaling aptamer of claim 1, wherein said fourth nucleotide is a chemically modified nucleotide.

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6. The signaling aptamer of claim 1, wherein the reporter molecule comprises one or more fluors or molecules that modulate the properties of said fluors.

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7. The signaling aptamer of claim 6, wherein the fluor is a fluorescent dye.

8. The method of claim 7, wherein the fluorescent dye is fluorescein, Cascade Blue, Texas Red or Rhodamine Green.

5 9. The signaling aptamer of claim 8, wherein the fluorescent dye labels a uradine.

10 10. The signaling aptamer of claim 9, wherein the signaling aptamer is raf17-U61C, raf17-U52C, raf17s, raCB7b, or raRG7b.

15 11. The signaling aptamer of claim 1, wherein a ligand for said signaling aptamer is adenosine 5'-triphosphate.

12. A signaling aptamer comprising:

a DNA nucleic acid binding species (aptamer) having a nucleotide sequence including a random insert of fifty-one nucleotides; wherein an A:C:G:T mole ratio of amounts of each nucleotide in said random insert is skewed such that the amounts of three of four nucleotides are about equal and substantially comprise a total amount of all nucleotides in said random insert; and

one or more reporter molecule(s); wherein said reporter molecule(s) labels the fourth nucleotide.

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13. The signaling aptamer of claim 12, wherein said nucleotide sequence has the sequence shown in SEQ ID NO: 1.

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14. The signaling aptamer of claim 12, wherein the skewed mole ratio of the random insert of said nucleotides is 3:3:2:0.38 A:C:G:T.

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15. The signaling aptamer of claim 12, wherein said fourth nucleotide is a chemically modified nucleotide.

5            16. The signaling aptamer of claim 12, wherein the reporter molecule comprises one or more fluors or molecules that modulate the properties of said fluors.

10           17. The signaling aptamer of claim 16, wherein said fluor is a fluorescent dye.

15           18. The method of claim 17, wherein said fluorescent dye is fluorescein, Cascade Blue, Texas Red or Rhodamine Green.

19. The signaling aptamer of claim 12, wherein a ligand for said signaling aptamer is adenosine 5'-triphosphate.